



1250 Peterson Dr., Wheeling, IL 60090

Company:	Step N' Shine LLC
Model Tested:	SNSTX1
Report Number:	13976

FCC Rules and Regulations / Intentional Radiators

Periodic operational in the 40.66-40.70 MHz Band and above 70 MHz.

Part 15, Subpart C, Section 15.231

THE FOLLOWING **MEETS** THE ABOVE TEST SPECIFICATION

Formal Name:	Step n' Shine
Kind of Equipment:	Rug Light/Activator
Frequency Range:	433.92
Test Configuration:	N/A (Tested at 4.5 vdc)
Model Number(s):	SNSTX1
Model(s) Tested:	SNSTX1
Serial Number(s):	N/A
Date of Tests:	February 26, 28, & March 5, 2008
Test Conducted For:	Step N' Shine LLC 4727 Yachtsmans Drive Amelia Island, FL 32034

NOTICE: "This report must not be used by the client to claim product endorsement by NVLAP or any agency of the U.S. Government". Please see the "Additional Description of Equipment Under Test" page listed inside of this report.

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Company:	Step N' Shine LLC
Model Tested:	SNSTX1
Report Number:	13976

SIGNATURE PAGE

Report By:

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Test Engineer
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Reviewed By:

William Stumpf
OATS Manager

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Brian Mattson
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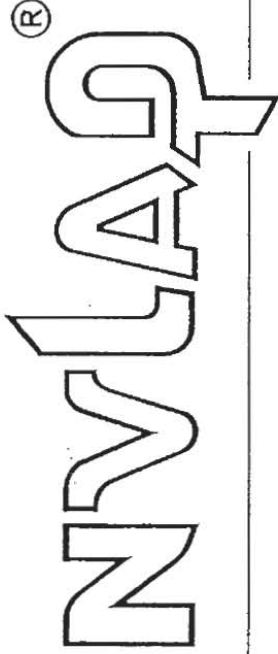
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United States Department of Commerce
National Institute of Standards and Technology



Certificate of Accreditation to ISO/IEC 17025:2005

NVLAP LAB CODE: 100276-0

D.L.S. Electronic Systems, Inc.
Wheeling, IL

is accredited by the National Voluntary Laboratory Accreditation Program for specific services,
listed on the Scope of Accreditation, for:

ELECTROMAGNETIC COMPATIBILITY AND TELECOMMUNICATIONS

*This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005.
This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality
management system (refer to joint ISO-ILAC-IAF Communiqué dated 18 June 2005).*



2007-10-01 through 2008-09-30

Effective dates

Dolly S. Bruce
For the National Institute of Standards and Technology

NVI AP-01C (REV. 2006-09-13)



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1.0 SUMMARY OF TEST REPORT

It was found that the Step n' Shine, Model Number(s) SNSTX1, **meets** the radio interference radiated emission requirements of the FCC "Rules and Regulations", Part 15, Subpart C, Section 15.231 for periodic operational in the 40.66-40.70 MHz Band and above 70 MHz. The AC Power Line conducted emissions test was not required because the Step n' Shine is powered from a D.C. power source. It does not have a line cord to plug into the A.C. power line.

2.0 INTRODUCTION

On February 26, 28, & March 5, 2008, a series of radio frequency interference measurements was performed on Step n' Shine, Model Number(s) SNSTX1, Serial Number: N/A. The tests were performed according to the procedures of the FCC as stated in the "Methods of Measurement of Radio-Noise Emissions for Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz" found in the American National Standards Institute, ANSI C63.4-2003. Tests were performed by personnel of D.L.S. Electronic Systems, Inc. who are responsible to Donald L. Sweeney, Senior EMC Engineer.

D.L.S. Electronic Systems, Inc. is a full service EMC/Safety Testing Laboratory accredited to ISO 17025. NVLAP Certificate and Scope can be viewed at <http://www.dlsemc.com/certificate>. Our facilities are registered with the FCC, Industry Canada, and VCCI.

Main Test Facility:

D.L.S. Electronic Systems, Inc.
1250 Peterson Drive
Wheeling, Illinois 60090

O.A.T.S. Test Facility:

D.L.S. Electronic Systems, Inc.
166 S. Carter Street
Genoa City, Wisconsin 53128

3.0 OBJECT

The purpose of this series of tests was to determine if the test sample could meet the radio frequency interference emission requirements of the FCC "Rules and Regulations", Part 15, Subpart C, Sections 15.33, 15.35, 15.205, 15.209 & 15.231 for Intentional Radiators operating in the Band 40.66-40.70 and above 70 MHz.



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4.0 TEST SET-UP

All emission tests were performed at D.L.S. Electronic Systems, Inc. and set up according to the ANSI C63.4-2003, Annex H. The conducted tests were performed with the test item placed on a non-conductive table (table top equipment), located in the test room. Equipment normally operated on the floor was tested by placing it on the metal ground plane. The ground plane has an electrical isolation layer over its surface approximately 7mm thick. The power line supplied was connected to a dual line impedance stabilization network electrically bonded to the ground plane, located on the floor. The networks were constructed per the requirements of the ANSI C63.4-2003, Annex H.

All radiated emissions tests were performed with the test item placed on a 80 cm high rotating non-conductive table, located in the test room. Equipment normally operated on the floor was placed on a metal covered turntable which is flush with the surrounding conducting ground plane. The ground plane has an electrical isolation layer over its surface approximately 7 mm thick. The EUT is separated from the turntable ground plane by a non-conductive layer. The equipment under test was set up according to ANSI C63.4-2003, Sections 6 and 8.



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5.0 TEST EQUIPMENT (Bandwidths and Detector Function)

All preliminary data below 1000 MHz was automatically plotted using the ESI 26/40 Fixed Tuned Receiver. The data was taken using Peak, Quasi-Peak or the Average Detector Functions as required. This information was then used to determine the frequencies of maximum emissions. Above 1000 MHz, final data was taken using the Average Detector.

Below 1000 MHz, final data was taken using the ESI 26/40 Fixed Tuned Receiver. These plots were made using the Peak or Quasi-Peak Detector functions, with manual measurements performed on the questionable frequencies using the Quasi-Peak or the Average Detector Function of the ESI 26/40 Fixed Tuned Receiver as required. Above 1000 MHz, final data was taken using the Average Detector on the Spectrum Analyzer.

The bandwidths shown below are specified by ANSI C63.4-2003, Section 4.2.

Frequency Range	Bandwidth (-6 dB)
10 to 150 kHz	200 Hz
150 kHz to 30 MHz	9 kHz
30 MHz to 1 GHz	120 kHz
Above 1 GHz	1 MHz

A list of the equipment used can be found in Table 1. All primary equipment was calibrated against known reference standards with a verified traceable path to NIST.



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6.0 AMBIENT MEASUREMENTS

For emissions measurements, broadband antennas and an EMI Test Receiver with a panoramic spectrum display are used. First the frequency range is scanned and displayed on the test receiver display. Next the scanned frequency range is divided into smaller ranges, and then it is manually tuned through to determine the emissions from the EUT. A headset or loudspeaker is connected to the test receiver's AM/FM demodulated output as an aid in detecting ambient signals and finding frequencies of significant emission from the EUT. If there is any doubt as to the source of the emission, it is further investigated by rotating the EUT, or by disconnecting the power from the EUT.

The EUT is set up in its typical configuration and operated in its various modes. For tabletop systems, cables are manipulated within the range of likely configurations. For floor-standing equipment, the cables are located in the same manner as the user would install them and no further manipulation is made. If the manner of cable installation is not known, or if it changes with each installation, cables or wires for floor-standing equipment shall be manipulated to the extent possible to produce the maximum level of emissions. For each mode of operation, the frequency spectrum is monitored. Variations in antenna height, antenna polarization, EUT azimuth, and cable or wire placement (each variable within bounds specified elsewhere) are explored to produce the emissions that have the highest amplitude relative to the limit. These methods are performed to the specifications in ANSI C63.4-2003.



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7.0 DESCRIPTION OF TEST SAMPLE: (See also Paragraph 8.0)

7.1 Description:

The test sample consists of a pressure sensitive switch, embedded in a rug, and an LED illuminated housing. Activating the pressure switch turns on the LED and sends an 'on' command. If the switch is re-activated while the LED is on, the transmitter sends an 'off' command and fades out the LED.

7.2 PHYSICAL DIMENSIONS OF EQUIPMENT UNDER TEST

Length: 22 in. x Width: 15.5 in. x Height: 2.5 in.

7.3 LINE FILTER USED:

N/A

7.4 INTERNAL CLOCK FREQUENCIES:

Switching Power Supply Frequencies:

N/A

Clock Frequencies:

8 MHz & 13.56 MHz

7.5 DESCRIPTION OF ALL CIRCUIT BOARDS:

- | | |
|---------------------|---------|
| 1. RF Transmitter | PN: TX1 |
| 2. Controller Board | PN: TX2 |

8.0 ADDITIONAL DESCRIPTION OF TEST SAMPLE: (See also Paragraph 7.0)

1: There were no additional descriptions noted at the time of test.

NOTE:

Tested transmitter in Continuous Transmit and Normal Operation.



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9.0 PHOTO INFORMATION AND TEST SET-UP

Item 0 Step n' Shine

Model Number: SNSTX1 Serial Number: N/A



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10.0 RADIATED PHOTOS TAKEN DURING TESTING



RADIATED FRONT TRANSMITTER



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10.0 RADIATED PHOTOS TAKEN DURING TESTING (CON'T)



RADIATED CLOSE-UP TRANSMITTER



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10.0 RADIATED PHOTOS TAKEN DURING TESTING (CON'T)



RADIATED BACK TRANSMITTER



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11.0 RESULTS OF TESTS

The radio interference emission charts can be seen on the pages at the end of this report. Data sheets indicating the test measurements taken during testing can also be found at the end of this report.

12.0 CONCLUSION

It was found that the Step n' Shine, Model Number(s) SNSTX1 **meets** the radio interference radiated emission requirements of the FCC "Rules and Regulations", Part 15, Subpart C, Section 15.231 for periodic operational in the 40.66-40.70 MHz Band and above 70 MHz. The conducted emissions test was not required because the Step n' Shine is powered from a D.C. power source. It does not have a line cord to plug into the A.C. power line.



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TABLE 1 – EQUIPMENT LIST

Test Equipment	Manufacturer	Model Number	Serial Number	Frequency Range	Cal Due Dates
Receiver	Rohde & Schwarz	ESI 26	837491/010	20 Hz – 26 GHz	11/07
Receiver	Rohde & Schwarz	ESI 40	837808/006	20 Hz – 40 GHz	12/07
Receiver	Rohde & Schwarz	ESI 40	837808/005	20 Hz – 40 GHz	12/07
Antenna	EMCO	3104C	00054891	20 MHz – 200 MHz	2/08
Antenna	Electrometrics	LPA-25	1114	200 MHz – 1 GHz	3/08
Antenna	EMCO	3104C	00054892	20 MHz – 200 MHz	3/08
Antenna	Electrometrics	3146	1205	200 MHz – 1 GHz	3/08
Antenna	EMCO	3104C	97014785	20 MHz – 200 MHz	2/08
Antenna	EMCO	3146	97024895	200 MHz – 1 GHz	3/08
Antenna	Rohde & Schwarz	HUF-Z1	829381001	20 MHz – 1 GHz	2/08
Antenna	Rohde & Schwarz	HUF-Z1	829381005	20 MHz – 1 GHz	8/08
Horn Antenna	EMCO	3116	2549	18 – 40 GHz	5/08
Horn Antenna	ETS Lindgren	3116	00062917	18 – 40 GHz	10/08

All primary equipment is calibrated against known reference standards with a verified traceable path to NIST.



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TABLE 1 – EQUIPMENT LIST

Test Equipment	Manufacturer	Model Number	Serial Number	Frequency Range	Cal Due Dates
Horn Antenna	A.H. Systems	SAS-574	221	18 – 40 GHz	4/08
Horn Antenna	A.H. Systems	SAS-574	222	18 – 40 GHz	4/08
Horn Antenna	Com Power	AH 118	071127	1-18 GHz	5/08
Horn Antenna	EMCO	3115	4451	1-18 GHz	5/08
Horn Antenna	EMCO	3115	6204	1-18 GHz	5/08
Horn Antenna	EMCO	3115	5731	1-18 GHz	6/08
Attenuator - 10dB Fixed	JFW	50FH-101-50N	50FH-010-10	DC-2 GHz	9/08
Attenuator-10dB Fixed	Pasternack	PE7014-10		DC-18 GHz	9/08
Attenuator-10dB Fixed	JFW	50FH-010-10		DC-2 GHz	9/08
Attenuator-20dB Fixed	Aeroflex Weinschel	75A-20-12	1071	DC – 40 GHz	7/08
Attenuator-20dB Fixed	Pasternack	PE7019-20		DC-18 GHz	9/08
Attenuator-40dB Fixed	JFW	50FHA0-040-200		DC-18 GHz	4/08
Audio Analyzer	HP	8903A	2336A03043	20 Hz-100 kHz	12/08

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TABLE 1 – EQUIPMENT LIST

Test Equipment	Manufacturer	Model Number	Serial Number	Frequency Range	Cal Due Dates
Attenuator-20dB fixed	MCE-WEIN	59955A-20		DC-40 GHz	9/08
Filter- Band Reject Tunable	K&L	3TNF-500/1000-B/B		360 MHz-1.25 GHz	Cal when needed
Filter- Band Reject Tunable	K&L	3TNF-63/125-B/B		62 MHz-200 MHz	Cal when needed
Power Meter	Anritsu	ML2487A	6K00002069		10/08
Power Sensor	Anritsu	MA2411A	031563	300 MHz-40 GHz	10/08
Power Sensor	Anritsu	MA2490A		50 MHz-8 GHz	10/08
Power Sensor	Anritsu	MA2491A		50 MHz-18 GHz	10/08
Preamp	R&S	TS-PR40	032001/003	26 GHz-40 GHz	1/08
Preamp	Miteq	AMF-8B-180265-40-10P-H/S		18 GHz-26 GHz	9/08
Preamp	Miteq	MF-6D-010100-50 A	213976	10 GHz-18 GHz	5/08
Preamp	Miteq	AMF-6F-100200-50-10P	668382	10 GHz-18 GHz	1/08
Preamp	Miteq	AMF-6D-100200-50	313936	1 GHz-10 GHz	5/08
Preamp	Ciao	CA118-4010	-----	1 GHz-18 GHz	1/08

All primary equipment is calibrated against known reference standards with a verified traceable path to NIST.



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TABLE 1 – EQUIPMENT LIST

Test Equipment	Manufacturer	Model Number	Serial Number	Frequency Range	Cal Due Dates
50 Ohm Load-50W	Pasternack	PE6039	-----	DC-18 GHz	Ref check
Modulation Analyzer	HP	8901B	2920A02096	150 kHz-1.3 GHz	11/08
Filter- High-Pass	Mini Circuits	NHP-600	438727	600 MHz-7 GHz	9/08
Filter- High-Pass	Mini Circuits	NHP-400	10433	400 MHz-5 GHz	9/08
Filter- High-Pass	Mini Circuits	NHP-900	-----	910 MHz-8 GHz	9/08
Filter- High-Pass	Q-Microwave	100460	-----	1.1 GHz	5/08
Filter- High-Pass	Q-Microwave	100461	-----	2.9 GHz	5/08
Filter- High-Pass	Q-Microwave	100462	-----	4.2 GHz	5/08
Filter- High-Pass	Q-Microwave	100460	-----	1.1 GHz	5/08
Filter- High-Pass	Q-Microwave	100461	-----	2.5 GHz	5/08
Filter- High-Pass	Q-Microwave	100462	-----	4.6 GHz	5/08
Filter- High-Pass	SOLAR	7930-10	921541	12 kHz	3/08
Filter- High-Pass	SOLAR	7930-10	888809	11 kHz	1/08

All primary equipment is calibrated against known reference standards with a verified traceable path to NIST.



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TABLE 1 – EQUIPMENT LIST

Test Equipment	Manufacturer	Model Number	Serial Number	Frequency Range	Cal Due Dates
Filter-Notch	K&L	4N45-2450/T100-0/0	-----	2.45 GHz	5/08
Signal Generator	R&S	SMR-40	100092	1 – 40 GHz	8/08
Filter- High-Pass	Planar	HP8G-7Q8-CD-SFF	PF1225/7728	$f_c = 7.5$ GHz	7/08
Filter- High-Pass	Planar	HP8G-7Q8-CD-SFF	PF1226/7728	$f_c = 7.5$ GHz	7/08
Filter- High-Pass	Planar	HP2G-1780-CD-SS	PF1227/7728	$f_c = 1.5$ GHz	7/08
Filter- High-Pass	Planar	HP2G-1780-CD-SS	PF1228/7728	$f_c = 1.5$ GHz	7/08
Filter- High-Pass	Planar	CL22600-9000-CD-SS	PF1230/7728	$f_c = 16.2$ GHz	7/08
Filter- High-Pass	Planar	CL22600-9000-CD-SS	PF1229/7728	$f_c = 16.2$ GHz	7/08
Signal Generator	Hewlett-Packard	HP8341B	2819A01017	10 MHz – 20 GHz	8/07
Directional Coupler	Mini-Circuits	ZDC-20-3	BF886600648	0.2 – 250 MHz	New 8/07
Directional Coupler	Mini-Circuits	ZFDC-20-4-N	NF801600636	1 – 1000 MHz	New 8/07
Bi-Directional Coupler	Mini-Circuits	ZX30-20-20BD-S+	SN350700724	500 – 2000 MHz	New 8/07

All primary equipment is calibrated against known reference standards with a verified traceable path to NIST.



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APPENDIX A

TEST PROCEDURE

Part 15, Subpart C, Section 15.231 (a)

ELECTRIC FIELD RADIATED EMISSIONS TEST



Company: Step N' Shine LLC
Model Tested: SNSTX1
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APPENDIX A

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST

1.0 CONDUCTED EMISSION MEASUREMENTS

Conducted emissions were measured over the frequency range from 150 kHz to 30 MHz in accordance with the power line measurements as specified in FCC Part 15, Subpart C, Section 15.207 & ANSI C63.4-2003. Since the device is operated from the public utility lines, the 120 Vac, 60 Hz power leads, high (hot) and low (neutral) sides, were measured by connecting the measuring equipment to the appropriate meter terminal of the LISN. During the test, the cables were placed and items moved (when appropriate) to maximize emissions. All signals were then recorded. The allowed levels for Intentional Radiators which is designed to connected to the public utility (AC) power line cannot exceed the following:

Frequency of Emissions (MHz)	Conducted Limits (dBuV)	
	Quasi Peak	Average
.15 to .5	66 to 56	56 to 46
.5 to 5	56	46
5 to 30	60	50

NOTE:

The conducted emissions test was not required because the Step n' Shine is powered from a D.C. power source. It does not have a line cord to plug into the A.C. power line.



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APPENDIX A

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST

2.0 PULSED OPERATION (Duty Cycle Correction Factor)

The radiated emission tests made at D.L.S. Electronic Systems, Inc. for the Step n' Shine, Model Number SNSTX1, are shown by the graphs on the following pages. The actual total "on time" during the 100 msec is 34.62912 msec with a total "off time" of 65.37088 msec resulting in a **9.21 Duty Cycle Correction Factor**.

To find the actual "on time" during the 100 msec period, the data word is multiplied by the number of data words per 100 msec, yielding actual on time. Taking this number and dividing it by the 100 msec period gives us the Duty Cycle. We then take the Log of the Duty Cycle and multiply it by 20. This gives us the Duty Cycle Correction Factor. The following method was used to determine the Duty Cycle Correction Factor:

Total on time during 100 msec.

$0.64128 \text{ usec/pulse on time} * 54 \text{ pulses} = 34.62912 \text{ usec (data word on time)}$

$34.62912 \text{ usec (data on time)} + 0 \text{ usec (data on time)} = 34.62912 \text{ usec total "on time"}$

$34.62912 \text{ msec (total "on time")} / 100 \text{ msec} = 0.346291198730469 \text{ Duty Cycle}$

$20 * \text{LOG}_{10} 0.346291198730469 = \textbf{9.21 dB Duty Cycle Correction Factor}$

NOTE:

For pulsed operation, the switches were set to generate their maximum "on" time, and measurements were made with the peak detector. As stated in Docket 86-422, the duty cycle of the pulse is determined from the total "on" time for the worst case condition during 100 msec. Using the percentage of the total "on" time over a 100 msec period, the total absolute average value was determined. As stated in Section 3, a maximum of 20 dB can be used.

See the following pages for the graphs of the actual measurements that were made:



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GRAPH(S) TAKEN OF THE PULSED OPERATION

PART 15.231

GRAPHS TAKEN OF THE PULSE TRAIN SHOWING THE FOLLOWING:

1. Number of Bits per Data Word
2. Number of Pulses per 100 msec
3. Off Time between Data Words
4. Data Word On Time



Company: Step N' Shine LLC
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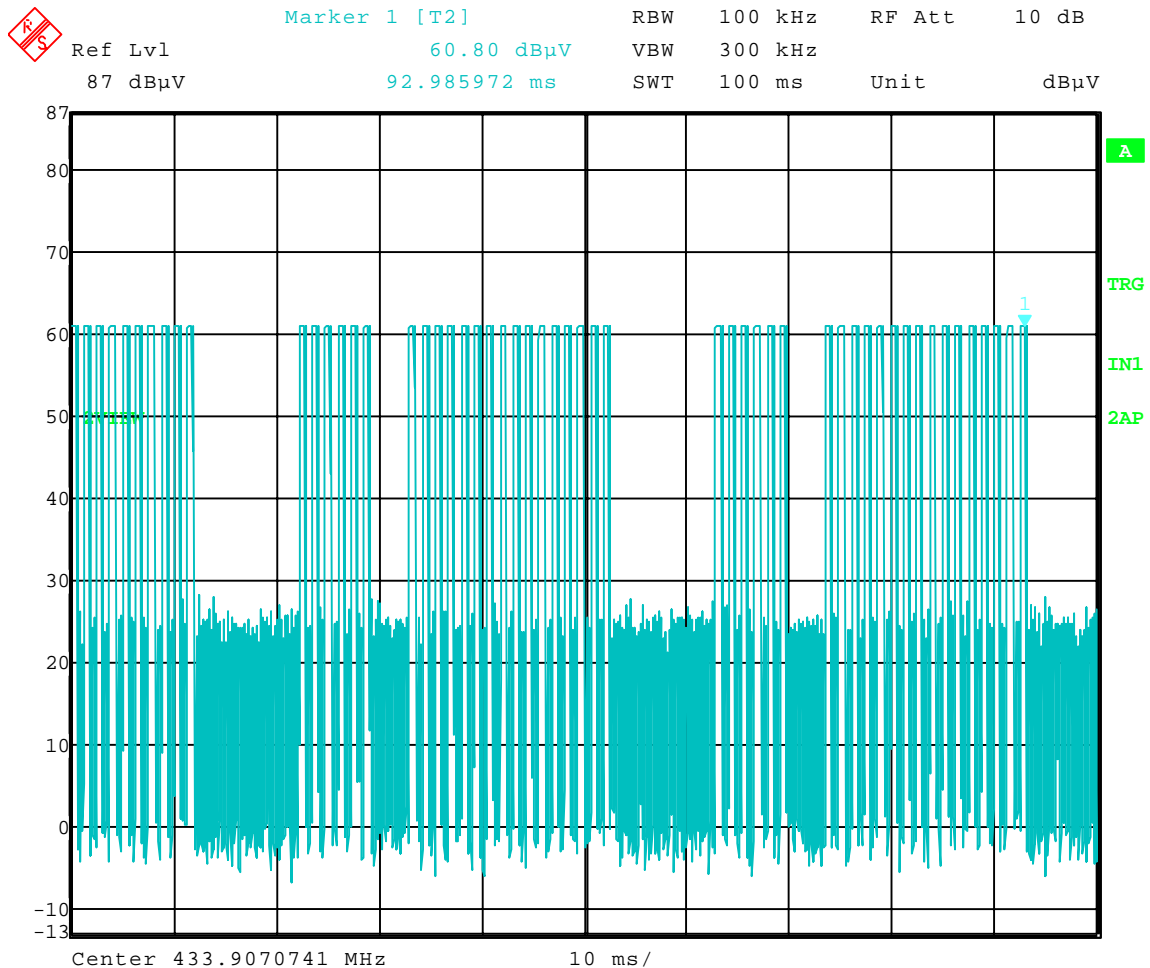
Test Date: 02-26-2008
Company: Step N' Shine, LLC.
EUT: StepNShine Transmitter
Test: Duty Cycle
Operator: Jason Lauer

Comment: 54 pulse at 641.28 μ s

Total on Time = 34.62912 ms during 100 ms Sweep

$20 \log (34.62912 \text{ ms} / 100 \text{ ms}) = -9.21$

Duty Cycle Correction Factor = 9.21 dB



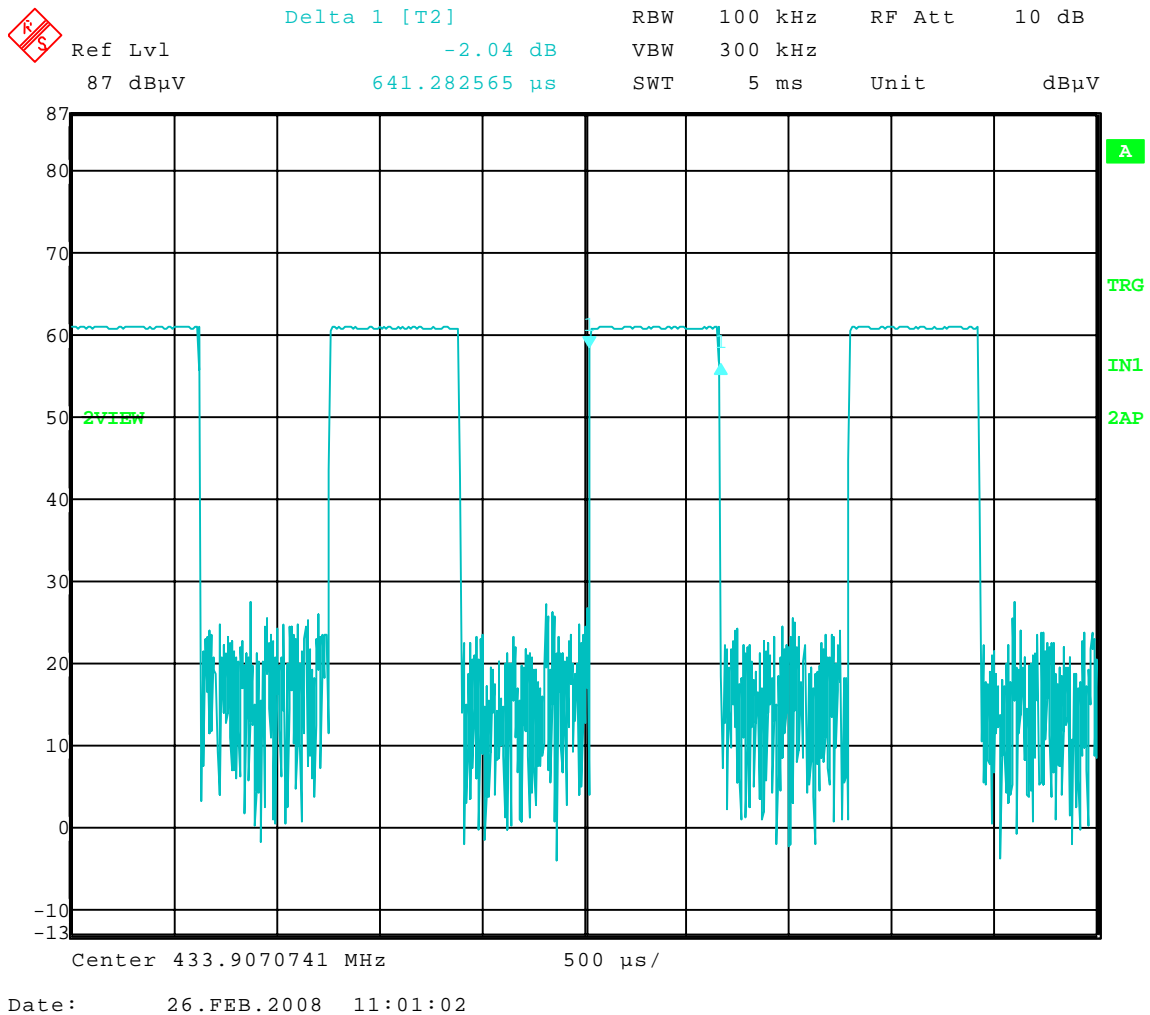
Date: 26.FEB.2008 10:58:44



Company: Step N' Shine LLC
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Test Date: 02-26-2008
Company: Step N' Shine, LLC.
EUT: StepNShine Transmitter
Test: Duty Cycle
Operator: Jason Lauer
Comment: 1 Pulse = 641.28 μ s





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GRAPH(S) TAKEN OF THE CONTINUOUS TRANSMIT MODE

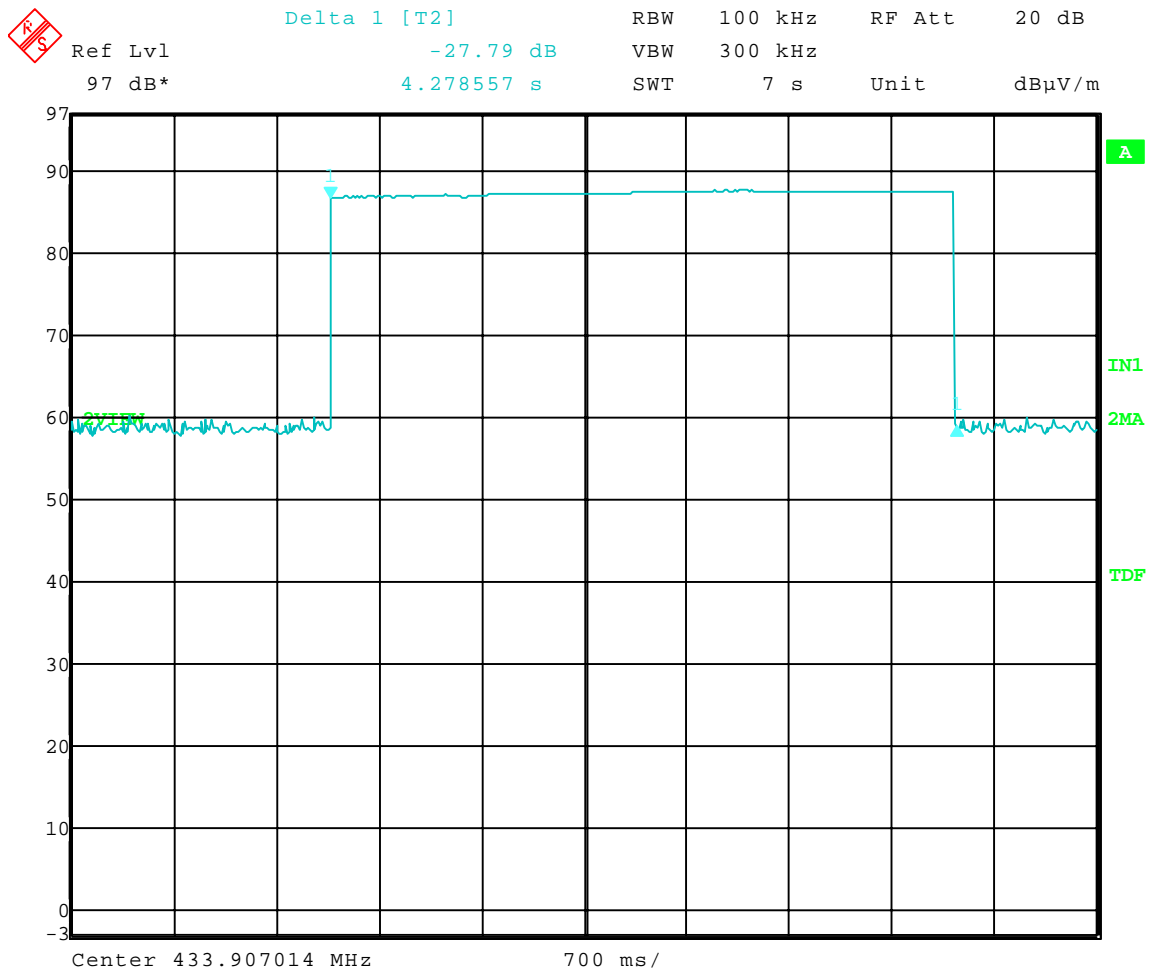


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Test Date: 2-28-2008
Company: Step N' Shine, LLC.
EUT: StepNShine Transmitter
Test: Transmit duration
Operator: Jason Lauer
Comment: Frequency: 433.9 MHz

Transmission Lasts 4.28 Seconds



Date: 28.FEB.2008 15:16:02



Company: Step N' Shine LLC
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APPENDIX A

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST

4.0 BANDWIDTHS

The bandwidth of the transmitter shall be confined to the following specifications as specified in Section 15.231c & d:

40.66 MHz to 40.7 MHz	$\pm 0.01\%$ within the band edges
70 MHz to 900 MHz	.25% of the center frequency
Above 900 MHz	.50% of the center frequency

The bandwidth is determined at the points 20 dB down from the modulated carrier.

As shown by the graph(s) on the following page(s), the bandwidth for the Step n' Shine was measured at 17.16 kHz, which meets the above specification. With a fundamental frequency of 433.92 MHz, the FCC Bandwidth limit is 1084.8 kHz when multiplying the fundamental by 0.0025%, with a margin of 1067.64 kHz.



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Company:	Step N' Shine LLC
Model Tested:	SNSTX1
Report Number:	13976

GRAPH(S) TAKEN OF THE BANDWIDTH EMISSIONS

PART 15.231c & d



Company: Step N' Shine LLC
Model Tested: SNSTX1
Report Number: 13976

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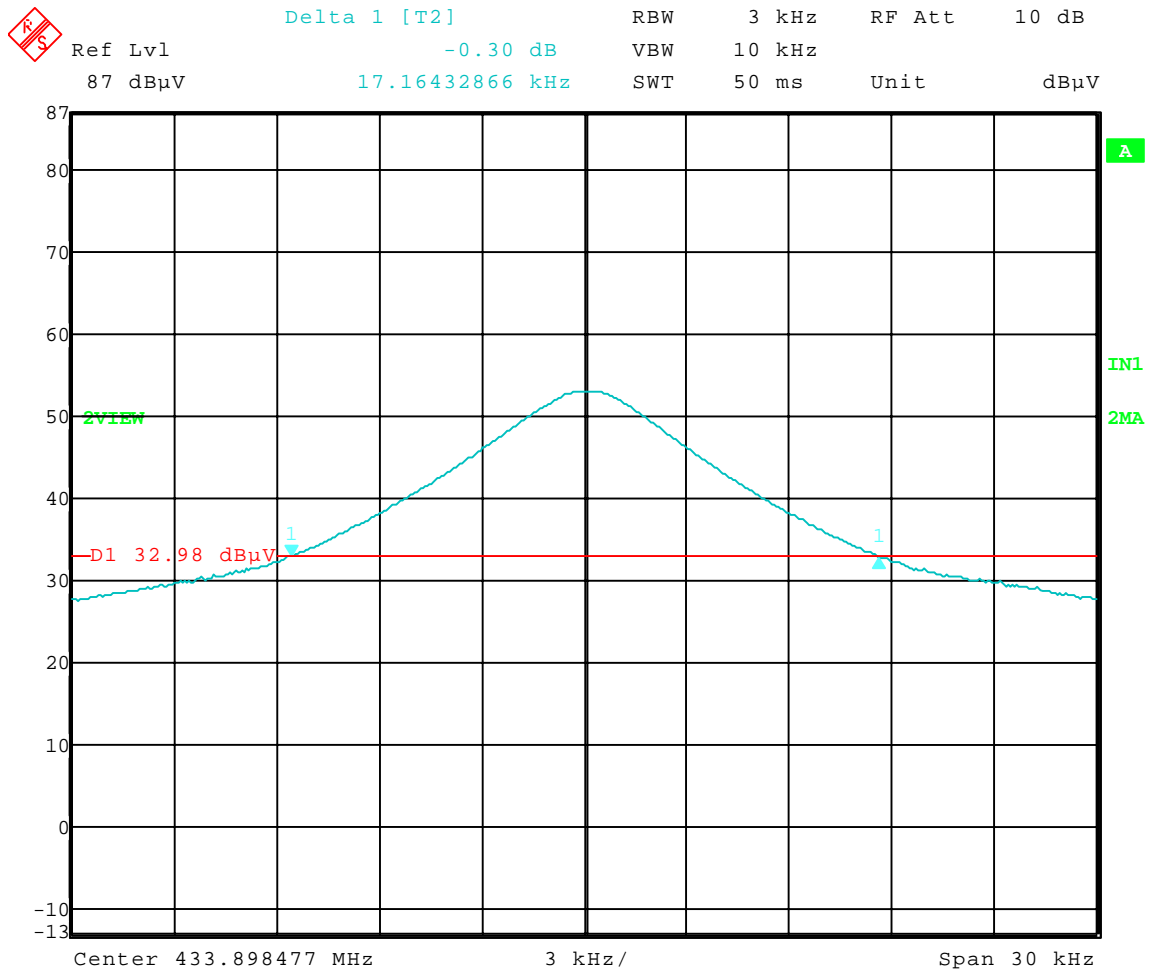
APPENDIX A

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST

Test Date: 02-26-2008
Company: Step N' Shine, LLC.
EUT: StepNShine Transmitter
Test: 20 dB Bandwidth - Radiated
Operator: Jason Lauer
Comment: Frequency: 433.92 MHz

20 dB Bandwidth = 17.16 kHz





Company: Step N' Shine LLC
Model Tested: SNSTX1
Report Number: 13976

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APPENDIX A

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST

5.0 FIELD STRENGTH OF SPURIOUS EMISSION MEASUREMENTS - SECTION 15.231(b)

For operation in the band 40.66 to 40.70 MHz and above 70 MHz the field strength of any emissions within this band shall not exceed the following table at a distance of 3 meters as specified in FCC, Part 15, Section 15.231(b), based on the average value of the measured emissions. The limits are shown in the following table.

Fundamental Frequency in MHz	Field Strength of Fundamental (uV/m at 3m)	Field Strength of Harmonics (uV/m at 3m)
40.66 to 40.70	2250 (67.04 dBuV)	225 (47.04 dBuV)
70 to 130	1250 (61.94 dBuV)	125 (41.94 dBuV)
130 to 174	1250 (61.94 dBuV) to 3750 (71.48 dBuV)	125 (41.94 dBuV) to 375 (51.48 dBuV)
174 to 260	3750 (71.48 dBuV)	375 (51.48 dBuV)
260 to 470	3750 (71.48 dBuV) to 12500 (81.84 dBuV)	375 (51.48 dBuV) to 1250 (61.94 dBuV)
470 and above	12500 (81.84 dBuV)	1250 (61.94 dBuV)

NOTE:

Preliminary radiation measurements may have been performed at a 3 meter or ten meter test distance. The frequency range from 30 MHz to 1000 MHz was scanned at receive antenna heights from one to four meters, and with a 360° rotation of the EUT. Plots were made and the worst-case emissions were recorded.

As stated in 15.35b the 20 dB peak-to-average limit is applicable to all devices measured using an average detector.



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Company:	Step N' Shine LLC
Model Tested:	SNSTX1
Report Number:	13976

DATA TAKEN OF FUNDAMENTAL AND SPURIOUS EMISSIONS

PART 15.231b



Company: Step N' Shine LLC
 Model Tested: SNSTX1
 Report Number: 13976

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APPENDIX A

Radiated Fundamental and Spurious Emissions – 30 MHz to 5 GHz Tested at a 3 Meter Distance

EUT: StepNShine Transmitter
Manufacturer: Step N' Shine, LLC.
Operating Condition: 72 deg F; 23% R.H.
Test Site: Site 3
Operator: Jason Lauer
Test Specification: FCC Part 15.231(b) and FCC Part 15.205
Comment: Continuous Transmit
Date: 3/5/2008

Note: All other emissions at least 20 dB under the limit.

Frequency (MHz)	Measurement Detector	Ant. Pol.	Level (dBuV)	Antenna Factor (dB/m)	System Loss (dB)	Total Level (dBuV/m)	Duty Cycle Correction (dB)	Final Corrected (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Ant. Height (m)	EUT Angle (deg)	Comment
433.9	Max Peak	Vert	60.25	15.89	4.39	80.54	N/A	80.5	100.8	20.3	2.0	270	Fundamental
433.9	Max Peak	Vert	60.25	15.89	4.39	80.54	-9.2	71.3	80.8	9.5	2.0	270	Fundamental
433.9	Max Peak	Horz	68.90	15.89	4.39	89.19	N/A	89.2	100.8	11.6	2.0	30	Fundamental
433.9	Max Peak	Horz	68.90	15.89	4.39	89.19	-9.2	80.0	80.8	0.8	2.0	30	Fundamental
867.8	Max Peak	Vert	24.64	21.96	6.50	53.10	N/A	53.1	80.8	27.7	1.3	90	Harmonic
867.8	Max Peak	Vert	24.64	21.96	6.50	53.10	-9.2	43.9	60.8	16.9	1.3	90	Harmonic
867.8	Max Peak	Horz	33.44	21.97	6.50	61.91	N/A	61.9	80.8	18.9	1.5	180	Harmonic
867.8	Max Peak	Horz	33.44	21.97	6.50	61.91	-9.2	52.7	60.8	8.1	1.5	180	Harmonic
1301.7	Max Peak	Vert	61.50	24.94	-36.25	50.19	N/A	50.2	74.0	23.8	1.4	30	Res. Band
1301.7	Max Peak	Vert	61.50	24.94	-36.25	50.19	-9.2	41.0	54.0	13.0	1.4	30	Res. Band
1301.7	Max Peak	Horz	59.62	24.94	-36.25	48.31	N/A	48.3	74.0	25.7	1.1	225	Res. Band
1301.7	Max Peak	Horz	59.62	24.94	-36.25	48.31	-9.2	39.1	54.0	14.9	1.1	225	Res. Band
1735.6	Max Peak	Vert	60.56	26.49	-36.18	50.87	N/A	50.9	80.8	29.9	1.0	90	Harmonic
1735.6	Max Peak	Vert	60.56	26.49	-36.18	50.87	-9.2	41.7	60.8	19.1	1.0	90	Harmonic
1735.6	Max Peak	Horz	58.29	26.49	-36.18	48.61	N/A	48.6	80.8	32.2	1.3	345	Harmonic
1735.6	Max Peak	Horz	58.29	26.49	-36.18	48.61	-9.2	39.4	60.8	21.4	1.3	345	Harmonic



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Radiated Fundamental and Spurious Emissions – 30 MHz to 5 GHz (CON'T)

Frequency (MHz)	Measurement Detector	Ant. Pol.	Level (dBuV)	Antenna Factor (dB/m)	System Loss (dB)	Total Level (dBuV/m)	Duty Cycle Correction (dB)	Final Corrected (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Ant. Height (m)	EUT Angle (deg)	Comment
2169.5	Max Peak	Vert	61.76	27.97	-35.75	53.99	N/A	54.0	80.8	26.8	1.0	180	Harmonic
2169.5	Max Peak	Vert	61.76	27.97	-35.75	53.99	-9.2	44.8	60.8	16.0	1.0	180	Harmonic
2169.5	Max Peak	Horz	63.45	27.97	-35.75	55.67	N/A	55.7	80.8	25.1	1.1	225	Harmonic
2169.5	Max Peak	Horz	63.45	27.97	-35.75	55.67	-9.2	46.5	60.8	14.3	1.1	225	Harmonic
2603.4	Max Peak	Vert	69.55	28.97	-35.26	63.26	N/A	63.3	80.8	17.5	1.0	300	Harmonic
2603.4	Max Peak	Vert	69.55	28.97	-35.26	63.26	-9.2	54.1	60.8	6.7	1.0	300	Harmonic
2603.4	Max Peak	Horz	69.55	28.97	-35.26	63.26	N/A	63.3	80.8	17.5	1.0	225	Harmonic
2603.4	Max Peak	Horz	69.55	28.97	-35.26	63.26	-9.2	54.1	60.8	6.7	1.0	225	Harmonic
3037.3	Max Peak	Vert	63.73	30.11	-34.64	59.21	N/A	59.2	80.8	21.6	1.0	90	Harmonic
3037.3	Max Peak	Vert	63.73	30.11	-34.64	59.21	-9.2	50.0	60.8	10.8	1.0	90	Harmonic
3037.3	Max Peak	Horz	64.41	30.11	-34.64	59.89	N/A	59.9	80.8	20.9	1.0	125	Harmonic
3037.3	Max Peak	Horz	64.41	30.11	-34.64	59.89	-9.2	50.7	60.8	10.1	1.0	125	Harmonic
3471.2	Max Peak	Vert	68.43	31.41	-34.13	65.71	N/A	65.7	80.8	15.1	1.0	225	Harmonic
3471.2	Max Peak	Vert	68.43	31.41	-34.13	65.71	-9.2	56.5	60.8	4.3	1.0	225	Harmonic
3471.2	Max Peak	Horz	71.50	31.41	-34.13	68.78	N/A	68.8	80.8	12.0	1.1	180	Harmonic
3471.2	Max Peak	Horz	71.50	31.41	-34.13	68.78	-9.2	59.6	60.8	1.2	1.1	180	Harmonic
3905.1	Max Peak	Vert	53.89	32.31	-33.71	52.48	N/A	52.5	74.0	21.5	1.0	200	Res. Band
3905.1	Max Peak	Vert	53.89	32.31	-33.71	52.48	-9.2	43.3	54.0	10.7	1.0	200	Res. Band
3905.1	Max Peak	Horz	53.75	32.31	-33.71	52.35	N/A	52.4	74.0	21.7	1.1	60	Res. Band
905.1	Max Peak	Horz	53.75	32.31	-33.71	52.35	-9.2	43.2	54.0	10.9	1.1	60	Res. Band
4339	Max Peak	Vert	51.67	32.30	-33.81	50.16	N/A	50.2	74.0	23.8	1.0	200	Res. Band
4339	Max Peak	Vert	51.67	32.30	-33.81	50.16	-9.2	41.0	54.0	13.0	1.0	200	Res. Band
4339	Max Peak	Horz	52.44	32.30	-33.81	50.92	N/A	50.9	74.0	23.1	1.0	90	Res. Band
4339	Max Peak	Horz	52.44	32.30	-33.81	50.92	-9.2	41.7	54.0	12.3	1.0	90	Res. Band



Company: Step N' Shine LLC
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TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST

6.0 RESTRICTED BANDS

As stated in Section 15.205a, the fundamental emission from the Step n' Shine shall not fall within any of the bands listed below:

Frequency in MHz	Frequency in MHz	Frequency in MHz	Frequency in GHz
.0900 to .1100	162.0125 to 167.17	2310.0 to 2390	9.30 to 9.50
.4900 to .5100	167.7200 to 173.20	2483.5 to 2500	10.60 to 12.70
2.1735 to 2.1905	240.000 to 285.00	2655.0 to 2900	13.25 to 13.40
8.362 to 8.3660	322.200 to 335.40	3260.0 to 3267	14.47 to 14.50
13.36 to 13.410	399.900 to 410.00	3332.0 to 3339	15.35 to 16.20
25.50 to 25.670	608.000 to 614.00	3345.8 to 3358	17.70 to 21.40
37.50 to 38.250	960.000 to 1240.00	3600.0 to 4400	22.01 to 23.13
73.00 to 75.500	1300.000 to 1427.00	4500.0 to 5250	23.60 to 24.00
108.00 to 121.94	1435.000 to 1626.50	5350.0 to 5450	31.20 to 31.80
123.00 to 138.00	1660.000 to 1710.00	7250.0 to 7750	36.43 to 36.50
149.90 to 150.00	1718.800 to 1722.20	8025.0 to 8500	ABOVE 38.60
156.70 to 156.90	2200.000 to 2300.00	9000.0 to 9200	

NOTE:

See the table of measurements made for the Fundamental, Harmonic and Spurious emissions in paragraph 5 of this section.